



The FAIRWEATHER

VISITOR GUIDE



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Welcome

to Glacier Bay, the National Park System's largest protected marine area and part of Earth's largest World Heritage Site. In 1925 Glacier Bay was set aside for its scientific value and easily approached glacial setting.

During your visit you will witness an immense landscape released from ice only a few centuries—or only a few years!—ago, and filled with the story of returning life. Glacier Bay is about natural change and discovery, from scientific studies unlocking the mysteries of life's return to denuded lands, to the Tlingit rediscovery of their traditional homeland after being driven out by ice. It is also about the discovery and wonder of visitors as they experience and explore a vast and changing landscape.



Almost all travel in Glacier Bay is by water. I invite you to take time in your journey to contemplate what is hidden below the surface. Watch the park film *Beneath the Reflections* and discover some of the wonders few visitors see. Peruse the stories in this publication about the changing seas, the life of halibut, and the return of traditional Tlingit gull egg gathering. Gain an understanding of how water creates Glacier Bay and connects us to the broader world. While Glacier Bay National Park and Preserve was established and the land protected almost a century ago, full protection of its marine habitat began barely a decade ago. Commercial fishing is being phased out, and the park understands better each year how to protect marine resources. Despite its park and wilderness designations, Glacier Bay is still vulnerable to the changing chemistry of the ocean and is a bellwether for understanding the impacts of rising carbon dioxide on both land and sea.

I hope that your visit here is filled with the same sense of wonder and discovery that John Muir experienced paddling up-bay with the Tlingit, and that William S. Cooper felt as he realized how Glacier Bay could reveal the secrets of ecological change. Glacier Bay offers myriad ways to “Find Your Park”, from taking a cruise ship or tour boat, to exploring in a kayak, or merely walking the shore peering into tide pools. For me it was once diving into the dark depths, while now it is sharing the solitude and wonder with my children. National parks are for people now and for those not yet born. I challenge you to “Find Your Park” and then discover how you can pass it on.

Philip Hooge
Superintendent

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Explore Bartlett Cove



If you just have a few hours...

Stop by the visitor center: On the second floor of the Glacier Bay Lodge you will find the National Park Service (NPS) information desk, visitor center, auditorium, and public reading area. Open daily with a variety of exhibits and educational materials from Alaska Geographic for purchase.

Catch a film: The National Park Service shows several different films daily in the auditorium.

Walk the Forest Trail: Go on your own or with a ranger. Daily ranger-led walks meet in the lodge. See trail details, page 4.

Go for a beach walk: See trail details, page 4.

Take in an evening program: Join a ranger in the auditorium for a presentation about the park.

If you have a half day...

Hike to the Bartlett River: See trail details, page 4.

Rent a bike: Start at the Glacier Bay Lodge and pedal towards Gustavus.

Explore the intertidal zone at low tide.

Join a Morning Discovery Hike with a park ranger.

If you have a full day...

Hike to Bartlett Lake: See trail details, page 4.

Go for a paddle: There are several options for kayaking around Bartlett Cove. Take a guided kayak trip or rent your own from Glacier Bay Sea Kayaks.

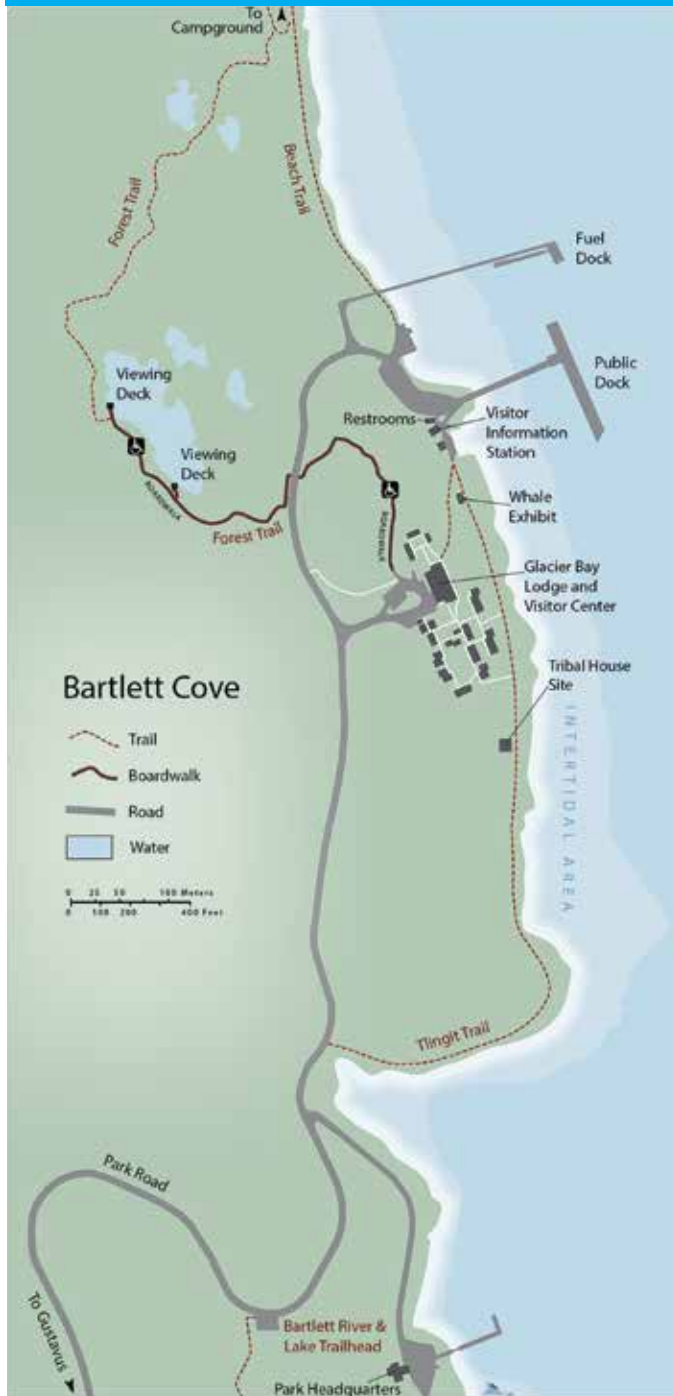
Become a Junior Ranger: Kids can visit the ranger at the NPS information desk to pick up their free Junior Ranger Activity Book. See page 37.



Get the Latest Schedule of Events

Please see the National Park Service visitor center information desk in the Glacier Bay Lodge, the bulletin board in front of the lodge, or the Visitor Information Station (VIS) near the public dock for updates, desk hours, and evening program topics.

Explore Bartlett Cove



Bartlett Cove is the only developed area within the wilds of Glacier Bay. The forests and shorelines offer great opportunities for hiking and exploring. Several relatively easy trails begin here. Spend some time, stretch your legs, and discover the wonders of Glacier Bay.

Forest Trail

Distance: 0.7 miles one-way

Time: 30 min.- 1.5 hours

This leisurely stroll meanders through a lush forest that grows atop a glacial moraine. A wheelchair accessible boardwalk takes you part of the way, leading to two viewing decks that overlook a serene pond. Return along the shore for an easy one-mile loop. Rangers lead a guided walk along this trail every afternoon. Check the posted activity schedule for times.

Bartlett River Trail

Distance: 4 miles roundtrip

Time: 4-5 hours

Meanders along an intertidal lagoon and through the spruce/hemlock forest before emerging and ending at the Bartlett River estuary. Watch for coyotes, moose, bear, and river otter along the beach. Ducks, geese, and other water birds concentrate in the intertidal area during migrations and molting. Salmon run up the river in the latter part of the summer, attracting hungry harbor seals.

Bartlett Lake Trail

Distance: 8 miles roundtrip

Time: 7-8 hours

Begin walking on the Bartlett River Trail. About $\frac{3}{4}$ of a mile down the trail at a signpost, the lake trail will branch off and begin to climb the moraine. This trail is less maintained so use caution to not lose the route. The chatter of red squirrels will accompany you as you wind your way over and around moss-covered boulders and lichen-covered trees before reaching the shores of Bartlett Lake. During this full-day wilderness journey, you may be richly rewarded in solitude and perhaps even the call of loons. Bring water, lunch, and rain gear.

Explore the Shore

Distance: varies

The shoreline beyond the docks continues for many miles past the campground. You may observe land and marine wildlife. Look for birds, listen for whales, and watch for sea otters feeding near shore. Let the magic of Glacier Bay draw you in for an hour, or even a day.

Whales on Display

For many years a “Skeleton Crew” of park employees, whale-bone specialists, and Gustavus community members worked together towards a common goal—to clean, repair, and articulate two unique whale skeletons. Both skeletons are now complete and on permanent display for visitors. During your visit, spend some time enjoying these two beautiful exhibits, and the unique perspectives that they provide of Glacier Bay’s amazing underwater world.

A Whale Named Snow

In Bartlett Cove, visitors can now get up-close and personal with an immense humpback whale skeleton. In July 2001, a cruise ship struck and killed Whale #68 (aka Snow), a humpback whale observed in Glacier Bay regularly since 1975. The park turned this tragedy into an educational opportunity. The entire skeleton was collected and community volunteers toiled alongside park staff to clean her huge bones.

To prepare the skeleton for final display, the park contracted with articulation specialist Dan DenDanto of *Whales and Nails*. In 2012, Snow traveled by truck from Glacier Bay to Dan’s shop in Maine. Dan spent the next 18 months cleaning and preparing the huge skeleton. Snow returned home last summer, and is now a spectacular display. She is the second largest of only 18 humpback skeletons on display world-wide. As part of



the celebration of her return, she was honored with the Tlingit name “Tsalxáan Tayée Yaay,” which translates as “*Whale Beneath Mt. Fairweather.*” Look for the display near the Visitor Information Station just a short walk from the Glacier Bay Lodge.



Little Whale

The Gustavus Public Library now hosts a 12-foot juvenile killer whale skeleton. Her body was found in Glacier Bay in 2005. Her death was attributed to fishing gear found in her stomach. After

cleaning the bones, the park partnered with articulation specialist Lee Post, the Gustavus Public Library, Gustavus School, and Alaska Geographic to transform her bones into an educational display. The final skeleton assembly took place in the school wood shop. During the opening ceremony, Tlingit elders named her “Keet’k”

which means “*little whale.*” In the library filled with countless stories, Keet’k will share her own unique story with present and future generations. To see this rare specimen, visit the Gustavus Public Library.



Glacier Bay Homeland

Most visitors approach Glacier Bay with an eye to capturing something new—perhaps a first glimpse of an ice-blue glacier, a few days of solitude in wilderness waters, or peaceful moments walking through the rainforest of Bartlett Cove. Even those who return again and again have the opportunity to experience some new sight or sound, to reflect on some newly awoken feeling.

But for the Huna Tlingit, Glacier Bay is a place not of new discoveries, but rather of reconnection with the life ways, knowledge, and ancestors of the past. The four primary Huna Tlingit clans lived in Sít' Eeti Gheeyí, the “Bay in Place of the Glacier” and along Icy Strait and the Outer Coast for countless generations; the Tlingit say since time before memory. It is a landscape that sustained their families with a rich abundance of fish, wildlife, and plants both before—and after—the Little Ice Age. Perhaps more importantly, it is a place that continues to sustain them through stories, songs, dances, and ongoing traditional practices. Although most Huna Tlingit today live across Icy Strait in the modern village of Hoonah, they return again and again to commune with ancestral spirits and to retrace the footsteps and actions of all those who have visited before them.



When Glacier Bay became a national monument in 1925, its borders encompassed much of the traditional Huna Tlingit homeland. New federal laws severely curtailed Native activities within the monument boundaries. So began a painful period of strained relations between the Huna Tlingit and the National Park Service.

But time and new understandings have brought much healing. In recent years, the National Park Service and the tribal government have worked cooperatively to reinvigorate those traditional harvest activities that are compatible with current regulations, such as berry picking and fishing. Park staff and tribal members collaborate each year on a variety of programs including cultural school curricula; summer camps; educational

trips to traditional places; archaeological research; and the collection, preservation, and sharing of oral histories, Tlingit language, and other traditional knowledge.

Although the Huna Tlingit no longer live permanently in Glacier Bay, you will find tangible evidence of their presence in and around Bartlett Cove. The sea otter hunting canoe on display next to the Visitor Information Station was carved by a team of Native carvers in 1987. Two Tlingit trail markers carved into living spruce trees near Glacier Bay Lodge serve as reminders of ancient ties to the land. And visitors wandering the Bartlett Cove shoreline will witness the first stages of construction of a long-anticipated Huna Tribal House (see page 7). This building, slated for completion in summer 2016, commemorates clan houses that once lined the shores of Bartlett Cove and will anchor the Huna Tlingit in their homeland again.

As you explore Bartlett Cove, allow yourself to hear the beat of traditional drums and the voices of ancestors recounting ancient clan stories. We each have the opportunity for new discoveries—or rediscoveries—of the wonders of this special place.

Tribal House Project

Eagle down, released from the fingertips of Tlingit children, drifted through the forests of Bartlett Cove last spring during a ground blessing ceremony for the soon-to-be-completed Huna Tribal House. Tribal elders, supported by their cultural nephews, spoke traditional words of welcome and thanked the towering trees for offering their lives in aid of the planned 2,500-square-foot cedar structure. The Xúnaa Shuká Hít, roughly translated as “Huna Ancestor’s House,” will be the first permanent clan house in Glacier Bay since Tlingit villages were destroyed by an advancing glacier over 250 years ago. A long-awaited dream, it will be a gathering place where tribal members can reconnect with their treasured homeland through ceremonies, workshops, camps, tribal meetings, and other events. It will also provide park visitors with opportunities to learn about Huna Tlingit history, culture, and life ways.

The Hoonah Indian Association and National Park Service (NPS) have worked closely with a team of clan leaders, craftsmen, planners, architects, and cultural resource specialists to design a building that reflects traditional styles but meets the needs of contemporary tribal members as well as park visitors. The focal point of the Tribal House will be a large open gathering area with a central fire pit, but modern amenities including utilities, a small kitchen for preparing Native foods, dressing room for dancers and performers, and detached restrooms have been incorporated into the design. Construction is now underway along the shoreline east of the Glacier Bay Lodge with an anticipated completion date of summer 2016.

Glacier Bay National Park is the ancestral homeland of the Huna Tlingit clans who sustained themselves for centuries on the abundant resources of the land and sea. Although villages inside the Bay were overrun by the Little Ice Age glacial advance of the 1700s, the Huna Tlingit re-established numerous fish camps and several villages in Glacier Bay soon after glacial retreat. The Huna Tribal House will memorialize the clan houses that once lined the shores of present day Bartlett Cove, now the site of NPS headquarters in Glacier Bay.

The project has also provided an opportunity to revitalize Tlingit artistic traditions. Through a cooperative agreement between the tribal government and NPS, master craftsmen have trained a cadre of local apprentices and students in traditional Tlingit art and design, carving, adzing, and spruce root weaving. Over the past four years, carvers have crafted an elaborately carved and painted cedar panel to serve as the house front, four richly detailed massive cedar interior house posts to support the house’s main beams, and an interior panel—or house screen—which depicts the stories of the four primary Huna Tlingit clans. Craftsmen continue to work on totem poles while apprentices focus on hand-adzing the lumber needed to clad the interior and exterior of the Tribal House. These precious cultural elements will impart spiritual value to the Tribal House, but as importantly, their design and completion has expanded the circle of tribal members who share in cultural knowledge. Many images of the carved elements are available on the Glacier Bay website and Facebook page.



Wildlife Viewing



By Land



Moose *Alces alces*

The largest member of the deer family is a recent newcomer to the bay. The first moose was spotted here in the late 1960s. Despite their tremendous size (bulls can weigh

1,600 pounds and cows 1,300 pounds), they can appear and disappear in thick brush with surprising stealth. Moose are usually solitary, except for cows with calves and during the fall rutting season. Cows give birth in the spring to one or two small, reddish calves, though usually no more than one survives. A calf will stay with its mother for two years before the cow drives it off as she prepares to have more young. Their diet includes willow leaves, grasses, herbs, and aquatic vegetation. Only bulls grow antlers.



Porcupine *Erethizon dorsatum*

You may find this prickly member of the community high up in a cottonwood tree nibbling tasty tender leaves. Except for their footpads and nose, porcupines are

completely covered with yellowish fur and quills, which are actually modified hairs tipped with barbs. A threatened porcupine will turn its back-end toward the source of trouble to present an intimidating display of quills that firmly suggests the would-be predator reconsider its dinner plans. This large rodent (second largest in North America behind the beaver) performs a broad repertoire of grunts, whimpers, and screams. Listen for them in the evenings “talking” to no one in particular.

Mountain Goats *Oreamnos americanus*

Arguably the most dapper of Glacier Bay’s mammals, mountain goats sport thick white coats of hollow hairs (that keep them warm in extreme weather), accented by black horns and hooves.



Goats may have been among the first land animals to recolonize Glacier Bay after the ice retreated, coming over the mountains from Lynn Canal to the east. They are at home on the steep rocky cliffs in the mid-to-upper bay. The special shape and design of their hooves allows them to leap nimbly from ledge to ledge in search of grasses, herbs, and low-growing shrubs. Seen at a distance, they are often mistaken for Dall sheep, which are found in the Interior.

Red Squirrel *Tamiasciurus hudsonicus*

If you see a little red flash zipping up a tree trunk or leaping nimbly among the branches, chances are it is a red squirrel. These agile rodents spend their summer preparing for



winter by collecting and storing green spruce cones in their underground caches. Like forest alarms, they chatter unrelentingly when a threat—like you—is near. They are a comedy tour de force when they harvest dandelion seed heads or go out on a limb for a savory green alder cone, and it is worth your time to stop and enjoy.

When the ice retreated in Glacier Bay, it left behind a scoured landscape of rocks and mud. In time, plants returned to the seemingly sterile land. Eventually, animals returned to the land and waters within the bay. Today, a wide variety of creatures call Glacier Bay home for at least part of the year, and the number could grow as more creatures find their way to this evolving landscape. As you explore Bartlett Cove or as you cruise up the bay, keep your eye out for some of these more frequently seen members of the community.

By Sea



Steller Sea Lion

Eumetopias jubatus

Like all members of the eared seal family *Otariidae*, Steller sea lions can support themselves on their flippers while ashore, and their rear flippers pivot, allowing them to get around with surprising speed.

In the water they become fluid, executing a seemingly endless series of underwater flips, turns, and rolls. Mature males can weigh almost 2,000 pounds, but females average only 600 pounds. During mating season, large bulls compete at established rookery sites on Glacier Bay's outer coast to collect harems of females. Unsuccessful and immature males often congregate at haul-out areas like South Marble Island. Though the number of sea lions is growing in the bay, the population in Western Alaska has decreased by 80 percent since the late-1970s leading to that portion of the population's current listing as endangered.



Harbor Porpoise

Phocoena phocoena

At five feet long and about 120 pounds, harbor porpoise are the smallest cetaceans in Alaska waters. Often seen in groups of two to ten throughout the bay, they

announce themselves by offering a brief glimpse of their small triangular dorsal fin cutting slowly through the water's surface when they come up to catch a breath. Harbor porpoise are generally dark gray with a slightly pointed face. They do not ride bow wakes, like their relative the Dall's porpoise, which are larger (6.4 feet and 300 pounds) and resemble a small orca in their black and white coloration. Though Dall's porpoise can be seen in the bay, they are more often near the entrance and in Icy Strait.

Harbor Seal

Phoca vitulina richardsi

Harbor seals have a dappled gray coat that can be highly variable between individuals. A thick layer of fat allows them to keep warm in otherwise chilling conditions. Unlike the sea lion, harbor seals have no external earflap and when out of the water, cannot support themselves on their flippers. On ice floes, they resemble plump sausages that move around by scooting on their ample bellies. In the water, they display admirable grace as they hunt for fish. Up to 1,700 seals converge on Johns Hopkins Inlet each summer for pupping and mating. Ongoing research in the park indicates that the population in the inlet has declined 75 percent in the past decade.



Sea Otter

Enhydra lutris

The Glacier Bay sea otter population has rebounded from zero to almost 9,000 in the last 20 years. Voracious eaters of things like crabs and clams, they exert a strong influence on their environment and scientists anticipate dramatic changes will take place in the underwater world of Glacier Bay. Sea otters perform many of their daily tasks such as eating, bathing, and sleeping while floating on their backs. Lacking a thick layer of blubber, otters instead have the densest fur of any mammal with up to one million hairs per square inch. Generally dark brown, their faces get whiter as they age.



Prehistoric to present: Tlingit Indians and their ancestors had both permanent and seasonal settlements in much of what is now Glacier Bay National Park and Preserve. Several hundred years ago at the end of the Little Ice Age, advancing glaciers forced the Tlingit people to abandon their villages and move to Hoonah, across Icy Strait from Glacier Bay.

Today, many Huna Tlingits still regard Glacier Bay as their ancestral home, and feel a special connection to it. See page 6.



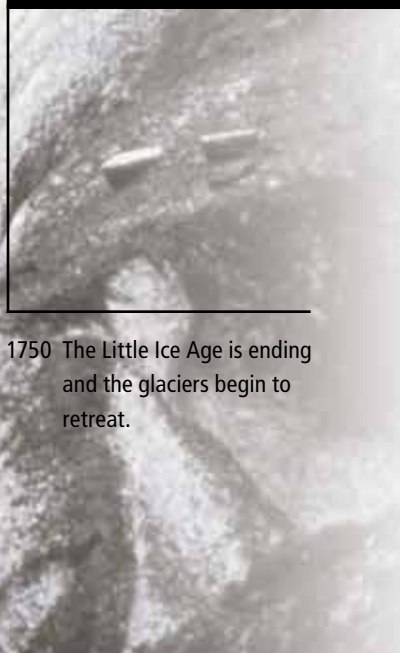
1778 Captain James Cook of the H.M.S. *Resolution* names Mt. Fairweather. His crew includes George Vancouver and William Bligh.

1877 Lieutenant C.E.S. Wood hired Tlingit guides to hunt mountain goats in the St. Elias Mountains. Convinced instead to hunt in Glacier Bay, he encountered Tlingit seal hunters encamped in several places. Wood was the first outsider to record a detailed account of Native life, wildlife and scenery.

1750

1800

1850



1750 The Little Ice Age is ending and the glaciers begin to retreat.

1794 Captain George Vancouver of the H.M.S. *Discovery* and Lt. Joseph Whidbey describe Glacier Bay as "a compact sheet of ice as far as the eye could distinguish." The "bay" is a mere 5-mile indentation in the coastline.

1786 Captain Jean-Francois de Galaup de Lapérouse's party of the *Boussole* and *Astrolabe* while in Lituya Bay described the Native peoples they met there, and the cartographers created the first detailed maps of park landforms. The expedition met tragedy on July 13 when 21 sailors were lost in a tidal wave at the mouth of Lituya Bay.



1879 Guided by Tlingit Indians from Fort Wrangell, John Muir enters the bay in a dugout canoe accompanied by a Presbyterian missionary named S. Hall Young. Glacial ice has retreated into the bay 40 miles since 1794.

1890 Muir makes his third visit to Glacier Bay, this time constructing a cabin at the base of Mt. Wright. He makes extensive observations of glaciers and explains the interglacial tree stumps.

1900

1953 Canadian Pacific Steamship Company brings the first modern cruise ships into the area.

1916 William S. Cooper, ecologist from the University of Minnesota, arrives in Glacier Bay to begin a study of plant succession. He returns five more times between 1921 and 1966.

1950

1992 Glacier Bay National Park and Preserve — together with Wrangell/St. Elias National Park (Alaska), Kluane National Park Reserve (Canada) and Tatshenshini-Alsek Provincial Park (Canada) — becomes part of a 24-million-acre World Heritage Site.

1980 The Alaska National Interest Lands Conservation Act is signed into law. Glacier Bay becomes a national park. Preserve lands are added. The new park and preserve total almost 3.3 million acres, of which 2.7 are designated Wilderness.

2000

1899 On September 10, a tremendous earthquake centered in Yakutat Bay causes rapid and extensive calving in Glacier Bay, leaving the waters ice-choked and impassable to ships.

1884 Captain Carroll pilots the side-wheel steamer *Ancon* to Muir Glacier, which will become a popular tourist destination until the 1899 earthquake.

1880 Guided by a Tlingit Indian named Tyeen, John Muir and Young return to visit Taylor Bay, Dundas Bay, and what will become known as Muir Glacier. Stickeen, a small dog, is part of the expedition.

1939 A presidential proclamation by Franklin Roosevelt doubles the size of Glacier Bay National Monument.

1925 President Coolidge establishes Glacier Bay National Monument on February 26.

1922 Cooper suggests national monument status for Glacier Bay to the Ecological Society of America.

1966 Glacier Bay Lodge opens.

1986 Glacier Bay National Park and Preserve, along with Admiralty Island National Monument, is designated an International Biosphere Reserve.

1995 The National Park Service and Huna Tlingit sign a Memorandum of Understanding, establishing a working relationship.

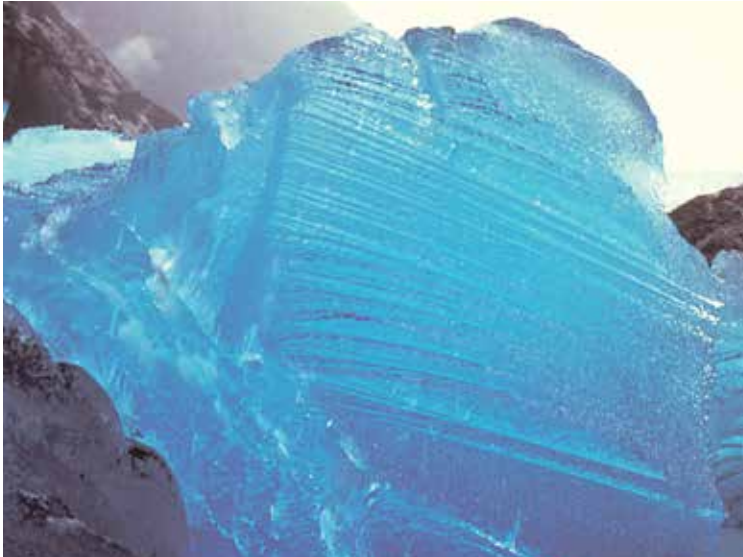
1998-1999 Congress passes legislation regarding the management of commercial fishing activities in Glacier Bay National Park.

2013 and 2014 About 500,000 people visit Glacier Bay National Park and Preserve each year.

Glaciers

“The Master Builder chose for a tool, not the thunder and lightning to rend and split asunder, not the stormy torrent nor the eroding rain, but the tender snowflake, noiselessly falling through unnumbered generations.”

— John Muir



Blue Ice, White Ice

If you've ever played with a prism in the sunlight, you know that natural light is made up of all the colors of the rainbow.

Each color of light has a specific wavelength and certain amount of energy. Colors such as red and yellow have long wavelengths and consequently low energy. But blue, with its short wavelengths, has high energy.

Glacier ice is made up of large, tightly packed ice crystals. When sunlight hits glacier ice, the ice acts like a prism and separates the light according to its wavelength. Low energy colors like red and yellow are absorbed by the ice. Blue has enough energy to reflect out to our eyes.

If the surface of the glacier ice becomes weathered or if the ice contains many air bubbles, the blue light becomes diffused. The ice appears white.

Rivers of Ice

A glacier is born high in the mountains, where the only precipitation that falls is snow, and the snow that falls does not melt. A slight depression on the mountainside catches this snow. Year after year, the snowflakes pile up. Soon the sheer weight of this vast accumulation presses down on itself. The snow compresses. The flakes change shape and fuse into ice. Eventually, the weight of the ice is too much for the depression to hold against gravity and the ice begins to flow downhill seeking equilibrium. Now that it's moving, it's a glacier.

Like a river, the glacier flows down the mountain choosing the path of least resistance. As it moves, it incorporates rocks into its lower layers. These acquired rocks grind away at the bedrock. In time, the glacial ice will carve deep valleys in the mountainside.

When the ice reaches lower, warmer elevations, it begins to melt. Eventually the loss through melting is greater than the supply of ice flowing down the mountain. The glacier ceases to make further progress, though the body of ice is still moving down the mountain. At this point, the glacier is like a one-way conveyor belt moving ice out of the mountains into the valleys.

Glaciologists have identified different types of glaciers based on their characteristics. For example, a glacier that remains confined within valley walls is a valley glacier. If it flows out of the valley and spreads out, it's a piedmont glacier. If it simply drops out of the valley, it's a hanging glacier. But the type of glacier most folks in Glacier Bay are interested in is the type that ends in the sea: the tidewater glacier.

Compared to glacial ice, seawater is warm and highly erosive. Waves and tides work away at the unstable glacier face, causing huge chunks to calve or break off into the ocean.

Barring significant climate changes, a glacier is in a constant state of renewal. New snow will continue to fall in the mountain basin to replace the snow that has compacted into ice and begun to flow downhill. The length of time it takes for a snowflake that falls in the mountains to emerge at the end, or terminus, of a glacier varies, depending on the speed at which the glacier is flowing. Scientists estimate ice you see at the face of the park's glaciers to be around 200 years old.

Glacier ID

At first glance, it may seem that all glaciers look alike. But as you spend time getting acquainted with the glaciers of Glacier Bay, you will soon realize that each one is unique.

Look all around for glaciers during your voyage of discovery. There are over 1,000 glaciers in Glacier Bay. Most are high in the mountains, though a few notable glaciers extend all the way to the sea. Which glaciers did you enjoy on your visit?



Reid Glacier



Lamplugh Glacier



Margerie Glacier



Johns Hopkins Glacier

<i>Glacier</i>	<i>Height</i> Above and Below Waterline	<i>Width</i>	<i>Length</i>	<i>Flow Rate</i> (in feet)	<i>Status</i>
Grand Pacific	60-180 feet above 0-60 feet below	2 miles	34.5 miles	1-4 feet / day 350-1,200 feet / year	Slowly Receding/ Thinning
Johns Hopkins	250 feet above 200 feet below	1 mile	12.5 miles	10-15 feet / day 4,000 feet / year	Advancing/ Thickening
Lamplugh	150-180 feet above 10-40 feet below	.75 miles	16 miles	2-3 feet / day 1,200 feet / year	Stable to Receding/ Thinning
Margerie	250 feet above 50-100 feet below	1 mile	21 miles	6-8 feet / day 2,000 feet / year	Stable
McBride	200-250 feet above est. 300 feet below	.5 miles	12 miles	15-20 feet / day 5,000-7,000 feet / year*	Rapidly Receding
Muir	30 feet above 0 feet below	.5 miles	12.5 miles	.5 feet / day 150 feet / year*	Slowly Receding/ Thinning
Reid	>20-130 feet above 0-10 feet below	.75 miles	9.5 miles	1-3 feet / day 800 feet / year*	Slowly Receding/ Thinning
Riggs	20-90 feet above 0 feet below	.75 miles	14.5 miles	1-2 feet / day 600 feet / year*	Slowly Receding/ Thinning

* Estimated figures provided by Dr. Dan Lawson of the CRREL.



Towering glaciers, amazing wildlife, spectacular mountains . . . Glacier Bay is overwhelming in its beautiful scenery and magnificent sights. Yet equally remarkable is what we do not see . . . buildings, roads, bridges, towers. Most of Glacier Bay will never be developed, for Glacier Bay has the highest conservation protection our country can give to wild lands: wilderness.

Perspectives on wilderness have changed throughout history. A place once feared became a place revered. Fifty years ago the United States made a bold statement to preserve some public lands as forever wild, defined by law as wilderness. The 1964 Wilderness Act, passed with an almost unanimous vote by Congress, created a National Wilderness Preservation System. Today, almost every state in the United States has designated wilderness and many countries around the world emulate the Wilderness Act.

Glacier Bay National Park and Preserve safeguards one of the largest units of the National Wilderness Preservation System, encompassing more than 2.7 million acres. Glacier Bay also protects a unique type of wilderness—marine wilderness. Thirteen percent of Glacier Bay’s water is designated wilderness, and therefore managed to be wild, untrammeled, and primeval.

By designating an area as wilderness, we choose to manage it differently. There is considerable thought put into keeping wilderness truly wild. Protecting wilderness goes beyond caring for the landscape. Wilderness protects areas as places where humans exercise humility and restraint. Wilderness provides sanctuaries for wildlife and renewal for humans, offering reservoirs of hope in challenging times.

In Glacier Bay’s wilderness, we have the opportunity to be overwhelmed by sights of glaciers, wildlife, and mountains. Yet there is so much more to wilderness than what catches our eye. Here we can be a part of something larger. We can immerse ourselves in wild lands. We can connect with wilderness, and carry that sense of wildness within us.

“ . . . it is hereby declared to be the policy of the Congress to secure for the American people of present and future generations the benefits of an enduring resource of wilderness.”

The Wilderness Act, 1964

People come from around the world to explore and admire Glacier Bay, including researchers. Here, the dramatic retreat of glaciers has created a premiere scientific laboratory. Explorer and glaciologist John Muir initiated the park's tremendous legacy of scientific inquiry. Botanist William Cooper was instrumental in procuring protected status for Glacier Bay. In fact, research is written in the founding legislation of Glacier Bay as a reason for its protection. From whales to plankton and glaciers to gulls, research is a common occurrence in Glacier Bay. This research provides greater understanding and appreciation for the wilderness around us. Read on to learn more, then go explore Glacier Bay yourself to make your own discoveries.

"The most beautiful thing we can experience is the mysterious. It is the source of all true art and science."

– Albert Einstein



Research Highlights

To investigate the breadth of research in Glacier Bay, explore our collection of Research Highlights. Ask for Research Highlights at the Glacier Bay Visitor Center and the Visitor Information Station, or browse the research section of Glacier Bay's website. Learn how growing sea otter populations are affecting the marine environment, compare the diet of wolves and bears, explore humpback whale family ties, and find out how we know that Glacier Bay's land is rising.



Learning by Listening

We come to Glacier Bay to see amazing sights, yet the sounds of the landscape make it come alive. Sounds are a rich source of scientific knowledge. By studying the voices of Glacier Bay, we can protect natural soundscapes for the animals that live here, as well as the people who visit.

After two years of recording and editing, the Voices of Glacier Bay project produced a diverse library of natural sounds—over 600 recordings! The library includes 90 species of birds and 14 mammals, as well as buzzing bugs, bubbling icebergs, and zipping zippers. Many of these sounds are available to you, no matter the season or your location. Visit <http://www.nps.gov/glba/naturescience/soundscape.htm>.



Listen to trumpeting humpback whales, thundering glacial ice, and more.

Even though you can listen to Glacier Bay from your computer, it is even better in person. While you are in Glacier Bay, take time for solitude and stillness. Try to listen as intently as you look. You will be amazed by how the landscape comes alive with sound.





Researchers collect ocean water from the depths of Glacier Bay to document changing conditions for marine life.

Changing Seas

Visitors to Glacier Bay journey on ocean waters, often with the hope of glimpsing magnificent marine life such as humpback whales. These amazing animals depend on the healthy marine environment protected by Glacier Bay National Park and Preserve. However, Glacier Bay's waters, like oceans everywhere, are vulnerable to change. Glacier Bay's waters are especially sensitive to the phenomenon of ocean acidification—the decrease in the pH of the ocean caused by the absorption of carbon dioxide (CO₂) from the atmosphere. Earth's oceans have always absorbed CO₂ from the air, but today's increasing atmospheric CO₂ levels, largely due to the burning of fossil fuels, mean higher levels of dissolved CO₂ in seawater.

Studies show that even small reductions in ocean pH can be damaging to animals that have shells, because the acidic water corrodes or eats away at their protective shell covers. Young clams, crabs, and fish grow more slowly when pH levels decline, so their chance of survival decreases. This includes plankton, the microscopic animals that are the foundation for the entire marine food web. Marine scientists predict a risk of fundamental changes in entire marine ecosystems due to ocean acidification.

A recent research project in Glacier Bay documented reduced pH in Glacier Bay's ocean waters, meaning that

the normally basic (higher-pH) seawater is becoming more acidic. While seawater is generally resistant to pH reductions, this resistance to acidification is diminished when abundant fresh water “dilutes” ocean water. What dilutes ocean water in Glacier Bay? Abundant fresh water flowing from melting glaciers, thawing snow, and rainfall. This dilution effect strengthens during summer months due to higher glacial meltwater runoff. Summer is also the time of greatest ocean productivity, so the impact on marine life increases.

Currently there is no evidence of any direct negative effects of ocean acidification in Glacier Bay. Researchers will continue to investigate ocean pH in order to increase our understanding of and ability to respond and adapt to this environmental change. The National Park Service cannot directly affect the levels of CO₂ entering Glacier Bay's ocean water and the resulting ocean acidification. However, the park strives to reduce other influences on the marine environment so that Glacier Bay can continue to be one of the healthiest marine areas in the world.





Ninety-five percent of Alaska's glaciers are thinning, stagnating, or retreating.

The Ice Is Melting

The Earth's climate is changing—and fast! Climate change is real, and the world will be different because of it. Scientists who study the Earth's climate have documented warming temperatures in Alaska. Warming temperatures lead to changes in fire cycles, tree growth, animal migrations, and more, including melting glaciers. Of the more than 100,000 glaciers in the state, 95 percent are currently thinning, stagnating, or retreating, and more importantly, the rate of thinning is increasing. Glacier Bay's glaciers follow this trend. Recent research determined that there is 15 percent less glacial ice in Glacier Bay now than in 1950. However, heavy snowfall in the towering Fairweather Mountains means that Glacier Bay remains home to a few stable and even advancing glaciers, a rarity in today's world.

Glacial melting and a warming ocean (water expands when warmed) will contribute to sea level rise. Fortunately, though, Glacier Bay's shorelines are unlikely to be inundated. As the park's glaciers melt and remove their great weight from the land, the Earth's crust will slowly bounce upward to compensate, at a documented rate of one inch per year. Known as isostatic rebound, this process should more than keep up with rising sea level.

Take a good look at the glaciers you see in Glacier Bay today. The next time you see these glaciers, they will be different. The Earth's climate is changing and Glacier Bay is warming. How will these changes affect you? One fact is certain: the choices we make today do make a difference in the future.

For more information about climate change in Alaska's National Parks, visit www.nps.gov/akso/nature/climate/state-of-change.cfm.





This gull was banded by researchers.
It is now at least 18 years old!

Tlingit Harvest of Gull Eggs in Glacier Bay

“Gathering eggs in Glacier Bay was something especially the family looked forward to. It was like Easter. Family and cousins gathered up there and we collected eggs, and it was a joyous occasion...”

Huna Tlingit elder

The Huna Tlingit, whose ancestral homeland includes Glacier Bay National Park and Preserve, traditionally harvested gull eggs every year. Gull eggs are an important traditional food source for the Huna Tlingit. Family harvest trips once served as a way to maintain ties with their homeland and to pass on stories, moral codes, and cultural traditions to the younger generation. In the 1960s, enforcement of the Migratory Bird Treaty Act and National Park Service (NPS) regulations formally ended this traditional harvest in Glacier Bay. In recent years the NPS and the Hoonah Indian Association have cooperated on a range of programs designed to encourage and reinvigorate cultural activities within the national park, including the potential harvest of gull eggs. In 2010, the NPS determined that egg harvest could occur within the park without impacting gull populations or other park

resources. Based on these findings, Congress passed legislation in 2014 authorizing harvest of glaucous-winged gull eggs in Glacier Bay National Park and Preserve. With the long awaited passage of this legislation, plans can be developed for the first gull egg harvest in many years.

The park has monitored gull populations in preparation for the upcoming egg harvest. Since 2012 wildlife biologists have counted over 2,000 glaucous-winged gulls nesting in seven areas potentially suitable for egg harvest. In 2012, the number of eggs was low, several colonies were abandoned before the end of the breeding season, and only one fledgling was observed in all seven colonies. However, in subsequent years, egg production was high and numerous chicks hatched and fledged in multiple colonies. Such variation from one year to the next suggests that gull success depends on annual weather conditions, food sources, and limited predation. This yearly variability highlights the value of ongoing monitoring. Park biologists will continue to collect data on gull nesting as the next generations of Huna Tlingit families renew their meaningful connections with their Glacier Bay homeland.



Journey to the Bottom of the Sea

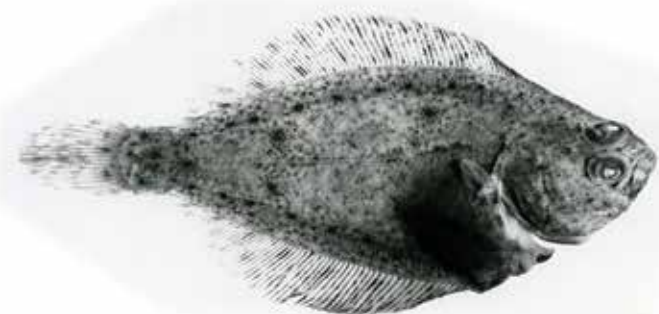
Halibut are not just tasty table fare; they live fascinating and mysterious lives. Considering their importance in the marine ecosystem and their fame at the dinner table, it is surprising how little we know about halibut.

We do know that halibut have a unique life journey. During the winter months, a female releases millions of eggs at great ocean depths. After hatching, young larvae travel thousands of miles, drifting with ocean currents for up to six months. When the fish are about an inch long, an amazing transformation begins: the left eye moves progressively over the head to join the right eye, so that both eyes are on the same side. Young halibut settle onto the ocean floor in shallow water and move into progressively deeper waters as they develop. Foot-long halibut are three years old or less, though adults can be nine feet long, weigh over 500 pounds, and live up to 55 years.

There are still unanswered questions about a halibut's life journey. To better understand halibut and their movement patterns, researchers in Glacier Bay tagged 25 halibut in 2013. Tags recorded depth, temperature, light, and magnetic field to estimate geographic location. Preliminary results from the study are surprising, contradicting the assumption that Glacier Bay's halibut migrate

each winter to spawning grounds in the Gulf of Alaska. Instead, results suggest the majority of halibut may stay in Glacier Bay, showing site fidelity throughout the year.

These findings are significant for halibut within Glacier Bay's protected waters. The National Park Service, in 1999, established regulations to phase out commercial fishing in Glacier Bay. While recreational halibut fishing continues, Glacier Bay's commercial halibut fishery is projected to end in about 2050. Therefore, if halibut spend the majority of their adult life within Glacier Bay, they will be protected from commercial harvest. Continued research on halibut in this unique marine ecosystem highlights Glacier Bay's valuable role as a nationally designated marine protected area.



Juvenile halibut, actual size.

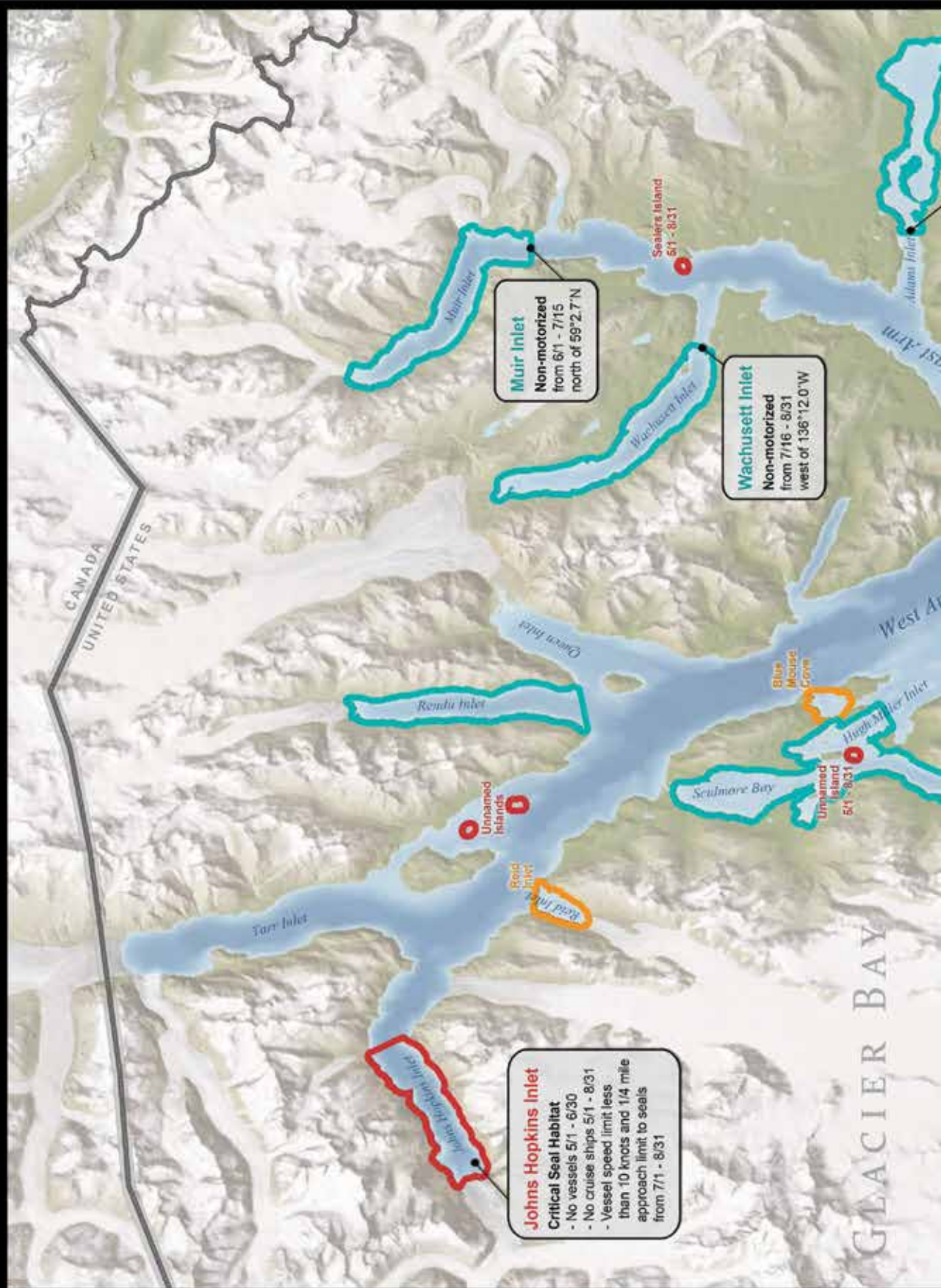
Photo: International Pacific Halibut Commission.

Guide to Park Waters

For Boaters, Kayakers, and Campers



Glacier Bay National Park & Preserve
National Park Service
U.S. Department of the Interior





Amazing Adventures Await!

Glacier Bay provides amazing opportunities for wilderness discovery. Time spent exploring the backcountry creates memories of a lifetime. Wilderness is full of surprises, so planning ahead and preparing for your adventure helps ensure a fulfilling and safe trip. The following pages give a wealth of information about camping and boating in Glacier Bay.

If you plan to camp or boat during your visit, your first stop should be at the Visitor Information Station (VIS) near the public dock. During the summer, a free permit is required for all boating and overnight camping. Orientations are required annually for all campers and boat cap-

tains. These orientations will help you to make the most of your time in Glacier Bay, safely and with minimum impact to the park. Orientations cover current backcountry conditions, regulations, safety issues, resource situations, tides, and weather. Backcountry campers can check out bear-resistant food containers to use free of charge during their visit.

It is your responsibility to know and obey the regulations of Glacier Bay National Park and Preserve. We can help. If you have any questions, please contact the park or ask a park ranger at the VIS, the visitor center, or at park headquarters.

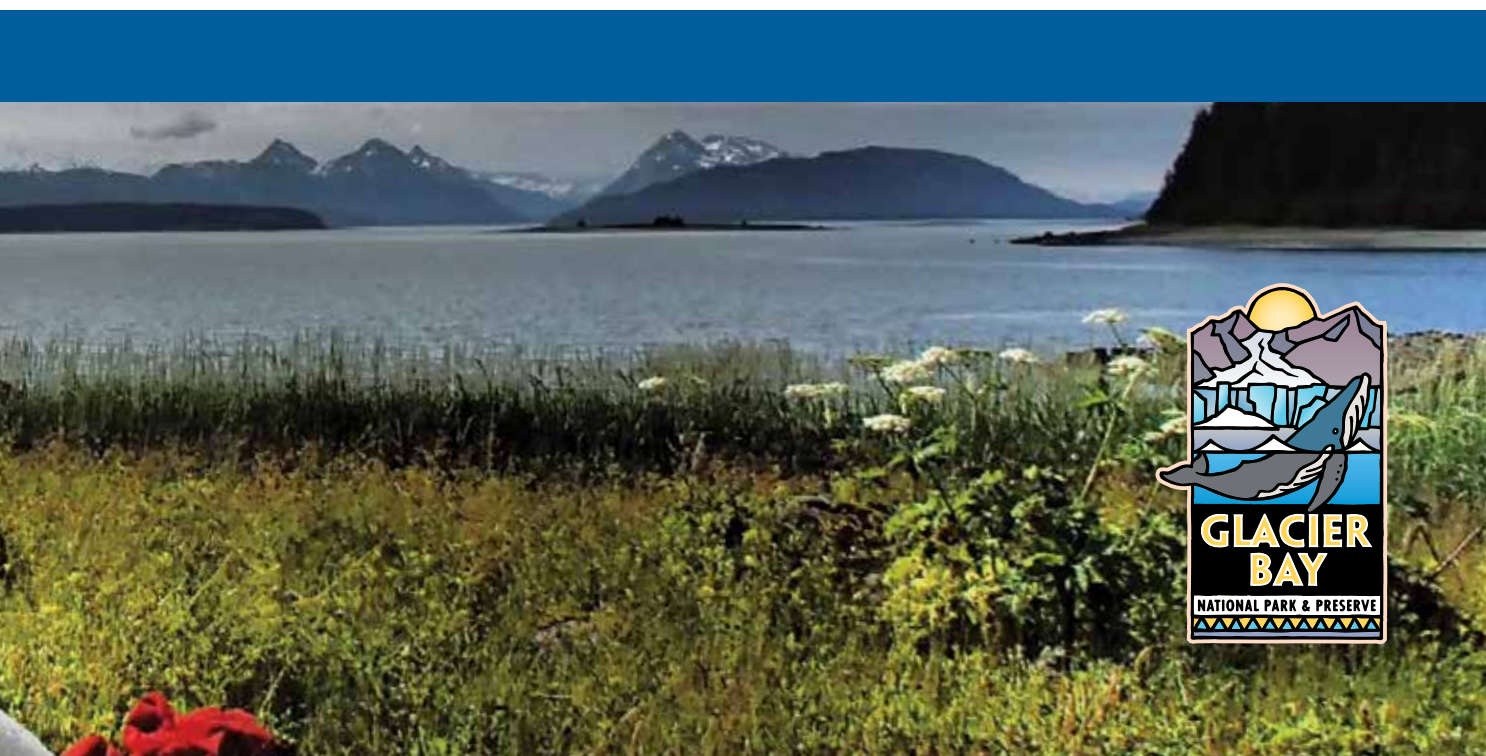
Help Keep Glacier Bay Clean

Glacier Bay is remarkably pristine and free of litter. You can help keep the park clean and efficient. Please separate your waste into the appropriate bins in the parking lot near the public dock. Your efforts to separate recycling helps make it possible to reach the park's record of over 70 percent of waste generated in day-to-day operations to be recycled or reused.

Recycling is a serious endeavor in Glacier Bay. The park collaborates with the neighboring city of Gustavus to send shipments of aluminum, paper products, steel, tin,

and most plastics to recycling centers. Park staff do a final hand sorting of trash to ensure that all recyclable items are in recycling shipments. Locally, food waste from the park and the lodge is composted into topsoil for use in the community.

With your help, Glacier Bay National Park and Preserve will continue to achieve one of the best recycling rates in the National Park Service. We can all work together to keep Glacier Bay's environment clean and healthy.



Park Regulations

The following is a partial listing of laws and regulations designed to help you have a safe, enjoyable visit while protecting park resources. For further information or questions on additional regulations, please ask a park ranger.

Feeding Wildlife is prohibited. All food, fish, garbage, and equipment used to cook or store food must be cached in a sealed motor vehicle, vessel (excluding kayaks), building, approved bear-resistant food containers, designated trash receptacle, or designated food cache.

Camping in Bartlett Cove is allowed only in the designated campground or one mile away from any road, building, or trail.

Firearms are prohibited in federal facilities. Special regulations apply when carrying firearms within Glacier Bay National Park and Preserve. Please contact the Visitor Information Station at Bartlett Cove at 907-697-2627 for further guidance.

Hunting is only permitted on the preserve lands in the Dry Bay area. All persons 16 years and older are required to hold a valid Alaska State Hunting License.

Harvesting the following for personal consumption or use is allowed: unoccupied seashells, all edible berries and fruits, edible mushrooms, clams, and mollusks. State regulations apply.

NOTE: Eating clams and mussels from Glacier Bay is not recommended because of the presence of a naturally occurring neurotoxin that causes paralytic shellfish poisoning in humans and can lead to sudden death.

Pets are allowed on land in only a few select areas, may not be left unattended, and must be leashed at all times. Pets are not allowed on trails or in the backcountry. Pets are allowed on the Bartlett Cove public use dock, on the beach between the Bartlett Cove public use dock and the park headquarters dock, within 100 feet of Bartlett Cove roads or parking areas unless otherwise posted, and on a vessel on the water.

Sport Fishing by all persons 16 years and older requires a valid Alaska State Fishing License, available during the summer months at Glacier Bay Lodge and some businesses in Gustavus. Consult Alaska State Fishing regulations when purchasing a license.

FOR YOUR SAFETY

You are in a remote, isolated area. The closest hospital or trauma facility is in Juneau, 30 minutes by air. Weather conditions can delay medical evacuations or other emergency transport, sometimes for days. Plan and prepare for your trips carefully! Even for short excursions, always let someone know where you are going and what time you plan to be back.



In the Backcountry

A free permit is required between May 1 and September 30. Certain parts of the bay are closed to campers either permanently or temporarily due to animal activity and resource protection. Ask a ranger at your camper orientation about any current advisories.

Take care of your park. By practicing “Leave No Trace,” we help to ensure that future generations can enjoy Glacier Bay in the same condition as it is today.

Plan Ahead and Prepare

- Have the appropriate charts, maps, and navigation tools.
- Allow time for a thorough camper orientation prior to obtaining your permit.
- Be familiar with park regulations and unique concerns for the area.
- Prepare for extreme weather, hazards, and emergencies.

Travel and Camp on Durable Surfaces

- Do not camp within 100 feet of a stream or lake.
- Leave your campsite as natural as you found it.
- A good campsite is FOUND and not MADE.

Dispose of Waste Properly

- Pack it in—pack it out.
- Keep all trash in a bear canister.
- Deposit human waste either in a hole dug at least six inches deep in a location at least 100 feet from any freshwater source, or in the intertidal zone (below high tide line) allowing the tide to remove the human waste.
- Toilet paper must be burned or carried out.

Leave What You Find

- You may collect unoccupied shells, and berries or plants that will be personally consumed.
- Collection of rocks, flowers, or artifacts is not allowed.
- Take only pictures.

Minimize Your Campfire

- Avoid the need for a campfire. Use a cook stove.
- Campfires are permitted below the high tide line. Break up any campfire rings before leaving the site.
- Burn only dead and downed wood. Do not burn interglacial wood, which comes from the exposed remnants of ancient forests found on certain beaches within the bay. Ask a ranger for details.

Be Considerate of Others

- Avoid camping near other parties.
- Keep your camp and activities as inconspicuous as possible.
- Groups larger than 12 are not allowed.

Respect Wildlife

- Choose a campsite that shows few signs of wildlife.
- Watch carefully for and avoid ground nesting birds.
- Cook and eat in the intertidal zone at least 100 yards from your campsite.
- Never leave food unattended.
- Store all food and scented items in a bear canister in brush or behind rocks at least 100 yards from camp, not in your boat or kayak.



✓ Check In

If you fail to check in at the Visitor Information Station as scheduled, rangers will begin a search the day after your scheduled return, starting with the areas indicated on your permit.

Bartlett Cove Campground

A free, walk-in tent campground is located at Bartlett Cove. You must register for a site at the Visitor Information Station (VIS). Wheelbarrows are available to help haul gear between the VIS, dock, and campground. Please observe the following:

- Store all food, trash, and scented items in the caches provided in the campground.
- Cook, prepare, and eat food only in the intertidal zone next to the campground. Never eat or cook in the campground or warming shelter.
- Dispose of trash and recyclables in appropriate bins near the VIS.
- Fires are permitted only in the designated campground beach fire ring.



Arriving on the Ferry?

Since 2011, the Alaska Marine Highway ferry system has provided regular service from Juneau.

Although this new option affords both visitors and residents many new opportunities, it may take time for the park and community to fully adapt. If visiting with a personal vehicle, you may not yet find all the services and amenities one might expect in other road-linked Alaska communities. If arriving with a vehicle be aware that:

- Glacier Bay National Park is essentially roadless. Bartlett Cove is accessible by vehicle from Gustavus, but all other areas may only be reached on foot, by boat, or small aircraft.
- National Park facilities in Bartlett Cove were not designed to accommodate visitors with private vehicles, and parking may be limited.
- There is one primitive campground in the park. It is accessible on foot only.
- There are no RV facilities (sites/dump station/hook-ups/etc.) or vehicle camping areas within the park. Camping is not permitted in parking areas or along the park road.
- For the latest updates on park facilities call 907-697-2230 or visit www.nps.gov/glba
- There are various lodging and other services available in Gustavus. For more specific information please contact the Gustavus Visitors Association at 907-697-2454 or www.gustavusak.com

Boating

Essentials for Motorized Vessels

Permits

- Are required for private motor vessels from June 1 through August 31.
- Are free and valid for seven consecutive days.
- Must be confirmed 48 hours before scheduled entry date or permit will be cancelled.
- Only one vessel may be operating at a time on each permit.

To confirm permits or to see if permits are available, call the Visitor Information Station “KWM20 Bartlett Cove” on marine band 16 or phone 907-697-2627. Permit applications are accepted 60 days before the intended entry date and are available at www.nps.gov/glba

Docks

Bartlett Cove Dock:

- Vessels may dock for a maximum of 3 hours in a 24-hour period. After that, anchor out beyond the white “no wake” buoys.
- Dinghies 10 feet or less may dock in the designated area for up to 24 hours.
- Do not leave vehicles or equipment unattended on docks.
- Use only slips designated for your use. See dock bulletin board.
- Potable water is available on the dock.

Fuel Dock:

- For hours, call Glacier Bay Lodge on marine band 16 or phone 907-697-4000.
- Fuel is available during the Glacier Bay Lodge operating season.
- Access to shore via the fuel dock is not permitted.
- Do not leave vessels unattended at the fuel dock.

Anchorage

- Boat operators should carefully consult their charts when choosing an anchorage.
- Anchor in water deep enough to remain afloat at low tide.
- Safety depends on ice, wind, and tide conditions.
- Please do not raft or anchor next to the South Sandy Cove Ranger Raft.
- Boats at North Sandy Cove, Reid Inlet, and Blue Mouse Cove may not run generators or any other non-propulsive engines between 10 p.m. and 6 a.m. except when using a windlass.



Be Careful on the Water

Closures: Areas designated as Critical Wildlife Areas are off limits to entry and landings for all or part of the year. In summer, some areas are off limits to motorized vessels—including sailing vessels with auxiliary motorized propulsion, even if not in use. Know and obey all closures. See Guide to Park Waters, pages 20-21.

Cruise Ships: No more than two cruise ships are permitted in the park per day. These large vessels cannot turn quickly and may take miles to stop. Do not approach them when they are stationary in front of the glaciers. Do not get in their path and do not assume they see you. Watch for large wakes, the waves of which can reach the beach over 10 minutes after the ship has passed.

Currents & Winds: The forces of tides, currents, and wind can combine in certain places to create dangerous conditions. Areas that may require extra caution include Sitakaday Narrows, Beardslee Entrance, McBride Entrance, Berg Bay, and the north shore of Adams Inlet. Plan crossings of wide channels carefully. Be prepared to change your route or wait for dangerous conditions to subside.

Ice: Glaciers can calve from above and below the waterline. Underwater tongues of ice can break off and shoot to the surface. Approaching tidewater glaciers closer than ¼ mile is not recommended.



Tides: Secure boats, kayaks, and gear well above the high tide line. Beware of extreme high tides. Some waterways are tide dependent, and may only be passable at high tide.

Landslides: Many of Glacier Bay's steep mountain-sides are unstable. Landslides may occur at any time, potentially resulting in large waves in narrow inlets and along shorelines.

Weather: Mid-May through September, weather forecasts and satellite images are posted daily at the Visitor Information Station bulletin board. Rangers broadcast the marine forecast and other important notices over marine band 16 at approximately 8:45 a.m. and 5:45 p.m. daily.

Maps and Charts

Topographic Maps:
Trails Illustrated Map by National Geographic 1:250,000
USGS Quadrangles 1:63,360

Nautical Charts:
17300 Stephens Passage to Cross Sound
17318 Glacier Bay
17302 Icy Strait and Cross Sound
17301 Cape Spencer to Icy Point
16762 Lituya Bay

Emergency

Call rangers "KWM20 Bartlett Cove" on marine band 16. NOTE: radio coverage in the bay is spotty and cell phone coverage is nonexistent. Hail another boat nearby to relay messages.

If you have no radio, wave a large brightly colored item toward a passing boat. Tie this item to a stick, oar, or kayak paddle for greater visibility.

Report all emergencies to the Visitor Information Station near the public dock by phone (907-697-2627) or by radio (KWM20 Bartlett Cove).

Protect Wildlife

Life's No Picnic

You are picnicking on an idyllic beach when a boat roars up out of nowhere. It stops just offshore from you. Its wake washes the beach, taking away your lunch. People on the boat laugh and talk loudly. They click their tongues to get your attention. Camera flashes explode. You drop your food and dash off into the bushes, anything to get away.

You have just experienced what happens to wildlife when thoughtlessly approached by humans. The effects can be devastating. Steller sea lions tumble over one another as they stampede into the water, female harbor seals lose their newborn pups among the ice floes when they become separated. Breeding birds flushed from nests leave eggs vulnerable to cooler temperatures and predators.

To reduce disturbance to wildlife and protect sensitive areas, the park has regulations that define the minimum distance you must keep from animals in Glacier Bay. Be aware of closures (see map on pages 20-21). In all situations, be aware and respectful. Remember that even if you maintain a legal distance, if an animal changes its behavior due to your presence, you are too close.

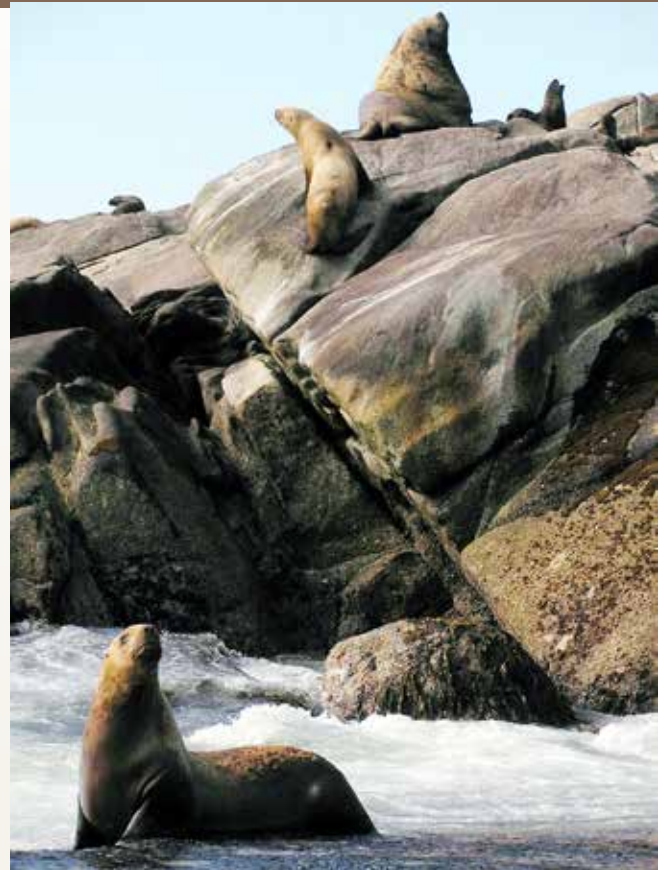
As you admire Glacier Bay's wildlife, keep in mind that every day they struggle to find what they need to eat, reproduce, protect their young, and prepare for winter as they avoid becoming food for others. Indeed, life is no picnic for the wildlife of Glacier Bay.

Harbor Seals

Harbor seal numbers have declined in Glacier Bay over the past 20 years. Help protect seals by travelling slowly and watching for them in the water and on icebergs. Seals can be disturbed by boats even at great distance. In Johns Hopkins Inlet you must stay at least 1/4 mile away from seals on ice.

Steller Sea Lions

Although numbers have increased here over the past 20 years, some in Glacier Bay are from the endangered Western stock. Stay at least 100 yards away from sea lions on land, and keep your distance from those in the water, too.



Nesting Birds

Many birds nest on the ground and are extremely vulnerable to disturbance! If a bird dive-bombs or makes repeated alarm calls, you are close to a nest. Watch your step to avoid crushing eggs or chicks, and move away to avoid disturbing the parents guarding the nest. You must stay at least 100 yards away from nesting seabird colonies, and several islands are closed to foot traffic (see map).

Humpback Whales

Whales can be startled by boats, even bumping or capsizing them. For your safety and to avoid disturbance, regulations require that you stay at least 1/4 mile away from whales. Whales can move surprisingly fast, so if one surfaces near you, it is recommended to make some noise by knocking on your boat.

Black and Brown Bears

All of Glacier Bay is bear country! Bears may appear anywhere at any time. Enjoy bear viewing from a safe and respectful distance. Even in your kayak, don't approach swimming bears or bears on shore.

Be Bear Savvy

Glacier Bay National Park is home to both brown bears, *Ursus arctos*, and black bears, *Ursus americanus*. Black bears are primarily creatures of woodlands and are found among the forested areas of the lower bay, including Bartlett Cove. In contrast, park biologists have recently discovered that brown bears inhabit virtually every part of Glacier Bay, from the barren glaciated areas to lush old growth forests.

While walking, hiking or camping in Glacier Bay, you may encounter a bear. The vast majority of these encounters do not result in human injury or property damage. You can help prevent injury to yourself or to the bear by taking a few basic precautions.

- Be alert.
- If you carry bear spray, know how to use it.
- Be aware of what goes on around your campsite.
- Make noise, especially in wind or near rushing water.
- Choose routes that offer good visibility.
- Travel in groups of two or more.
- Keep your personal items and food within reach.
- Do not pursue or approach bears for photographs.
- Avoid streams with spawning fish.



Be a Smart Camper

Both campers and bears frequent the beaches of Glacier Bay. Bears only have six to eight months to acquire the calories and fat reserves needed for the entire year, and the shoreline is essential for food and travel. The following guidelines will minimize your disruption of bears and help keep them wild.

Cooking and storing food

- Cook and eat in the intertidal zone at least 100 yards from your tent and food storage area.
- Wash cooking gear in marine waters.
- Be prepared to quickly stow all food should a bear suddenly approach.
- Keep all food, trash, and other scented items in a bear-resistant food container (BRFC).
- At night, store BRFCs and clean cooking gear in brush or behind rocks away from animal trails 100 yards from camp, not in your boat.

Choosing a campsite

- Avoid areas with bear sign including an abundance of scat, animal trails, and chewed or clawed trees.
- Avoid active salmon streams.
- Store your kayak and pitch your tent clear of the beach.
- Select a site that would allow bears room to pass at high tide.
- Maintain a clear view of your gear and surrounding terrain.

Control your gear

- Keep gear together. The more spread out your gear is the more difficult it is to defend.
- To minimize potential bear damage to gear, consider breaking down your campsite daily.



Fishing the Bartlett River

- Harvested fish must be kept within 6 feet of person.
- All harvested fish must be packed out whole, except for gills and entrails which should be disposed of in the deepest and fastest current of the stream.
- If a bear approaches while you have fish on the line, cut the line.
- Never yield your catch or other food items to a bear or other wildlife.



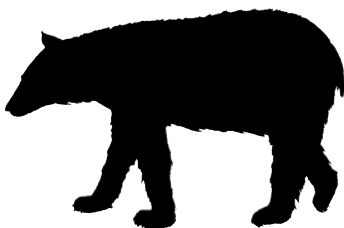
Glacier Bay Bears

Glacier Bay National Park is home to both brown bears, *Ursus arctos*, and black bears, *Ursus americanus*. Black bears are primarily creatures of woodlands and are found among the forested areas of the lower bay, including Bartlett Cove. In contrast, park biologists have recently discovered that brown bears inhabit virtually every part of Glacier Bay, from the barren glaciated areas to lush old-growth forests.

Telling the difference between the two species can be tricky. Simply looking at the color doesn't help. Black bears can be black, brown, blonde, even blue-gray—as is the case of the rare color phase found in Southeast Alaska called “glacier bear.” Brown bears can be any shade from honey blonde to black. A few key physical characteristics can clarify which type of bear you have spotted:

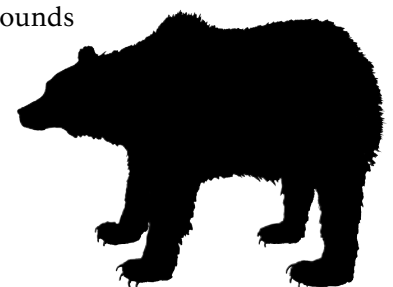
Black Bears

- Straight facial profile
- No shoulder hump
- Prominent ears
- Short, curved claws
- 3 feet at the shoulder
- 125 to over 300 pounds



Brown Bears (also called “grizzlies”)

- “Dish-shaped” facial profile
- Prominent shoulder hump
- Long, straight claws
- 3.5 feet at the shoulder/up to 9 feet when standing on hind legs
- Average 500 to 1,000 pounds



When encountering humans, most bears will run away, approach curiously, appear to ignore the situation, or act defensively. By staying alert, calm, and tailoring your reaction to the bear's behavior and species, you increase the odds of a positive outcome for both you and the bear.



If You See a Bear

The Bear	What You Can Do	
May or may not be aware of you	<p><i>What is your activity and degree of mobility?</i></p> <p><i>You are hiking or kayaking (mobile):</i></p> <ul style="list-style-type: none"> • Change your course to avoid bear. • Monitor bear's movement. • If bear is close, talk calmly to avoid surprising it. 	<p><i>You are camping or eating (not mobile):</i></p> <ul style="list-style-type: none"> • Keep all gear under direct control. • Group together without blocking bear's route. • Talk calmly to make bear aware of you. • Stand your ground.
Moves toward you	<ul style="list-style-type: none"> • Monitor bear's movement. • Stand your ground and talk calmly. • Allow bear to pass peacefully. 	
Becomes focused on you	<ul style="list-style-type: none"> • Stay together and stand your ground. • Be assertive and elevate your defense: clap your hands, wave your arms, use noisemakers such as air horns, or bang pots together. 	
Charges	<ul style="list-style-type: none"> • Continue to stand your ground and look big. • Use pepper spray if you have it. • Few charges end in contact. 	
If a bear makes contact	<ul style="list-style-type: none"> • Fight back vigorously. • This is likely a predatory attack. 	
Enters your tent	<ul style="list-style-type: none"> • Fight back. 	

If You Surprise a Bear

The Bear	What You Can Do
May react defensively and may snort, huff, pop its jaw, or charge	<ul style="list-style-type: none"> • Stand your ground and talk calmly to the bear. • Attempt to move away slowly.
Begins to follow you	<ul style="list-style-type: none"> • Stand your ground.
Charges	<ul style="list-style-type: none"> • Use pepper spray.
Is a brown bear and makes contact	<ul style="list-style-type: none"> • Play dead—lie flat, face down on the ground, and lace your fingers behind your head. Do not move.
Is a black bear and makes contact	<ul style="list-style-type: none"> • Fight back vigorously. • This is likely a predatory attack.



On this mother and calf, you see how biologists recognize individual whales by photographing the black and white pigment pattern on the underside of their tail flukes, which is stable over the whale's lifetime.

Glacier Bay Is Home for Humpback Whales

Seeing a humpback whale in Glacier Bay is an unforgettable experience for many visitors. The true giants of Glacier Bay's waters, these endangered animals are 40-50 feet (12-16 m) long and weigh over 35 tons (32,000 kg). The humpback is a baleen whale that migrates seasonally. Most Glacier Bay whales swim to Hawaii each winter to mate and give birth, a 2,500-mile (4,000 km) journey that takes about a month each way. These whales do not eat while they are wintering in the tropics. All spring, summer, and fall in Alaska, they gorge themselves on high-calorie small schooling fish such as capelin and herring.

The park's whale monitoring program began in 1985, and is now one of the world's longest running studies of humpbacks. Since the 1970s, biologists have identified more than 740 different individual humpback whales in Glacier Bay and Icy Strait. In 2013, about 250 different whales were documented, including some with sighting histories spanning 42 years! Commercial whaling for humpbacks in Alaska ceased in the 1960s, and the southeastern Alaska population is now increasing about 5 percent annually.

Humpback whale population recovery is a conservation success story, but in populated areas it creates more opportunities for collisions with vessels. All types and sizes of vessels, from kayaks to cruise ships, have accidentally hit whales in Alaska. Colliding with a whale, especially in a fast-moving, small vessel, is dangerous and scary. To protect your own safety and these magnificent creatures, proceed cautiously and reduce your speed in areas where whales may be present.



Biologists have been monitoring humpbacks in Glacier Bay for 30 years.

Whale Watching

To minimize disturbance to endangered humpback whales, Glacier Bay National Park and Preserve has developed some of the most protective boating rules visitors will find anywhere. Because the park's mission is to protect and preserve these magnificent creatures, we maintain strict operating and speed restrictions in critical whale habitat.

Rules for All National Park Waters

All vessels, including kayaks, must not:

- Operate within 1/4 nautical mile of a humpback whale.
- Pursue a humpback whale within 1/2 nautical mile by altering course or speed in a manner that results in decreasing the distance between the whale and the vessel.

Whale Waters

These are special areas in Glacier Bay that require additional speed and operating restrictions. These critical areas change depending on current whale activity in the bay. See Guide to Park Waters on page 20 for areas and dates that regulations are in effect and check at the VIS for additional temporary restrictions before setting out.

Rules for Lower Glacier Bay Whale Waters (May 15-Sept 30)

All vessels must operate within speed restrictions. Check at the VIS for current status. Motorized vessels over 18 feet in length must:

- Maintain a distance of at least one mile from shore. In narrower areas, navigate a mid-channel course (unless fishing or operating solely under sail).
- Approach or land on shore perpendicularly, taking the most direct line to shore.
- Watch for additional whale waters designations in other areas. Check at the VIS for current whale waters boundaries and regulations.

What do you do if a whale suddenly appears in front of you?

If your vessel is accidentally positioned within a 1/4 nautical mile of a humpback whale, immediately slow your vessel to ten knots or less. Don't shift into reverse unless impact is likely. Then, carefully direct or maintain your course away from the whale until at least 1/4 nautical mile separation exists.

Boating Safely Around Whales

- Pay attention and reduce speed when you see whales or suspect they are nearby.
- Don't expect whales to avoid or outswim your boat.
- Make noise instead of drifting silently near whales. Never assume that a whale is aware of your presence and location. Humpback whales do not use echolocation so they rely on passive listening to locate your vessel.
- Report collisions in the park to the Visitor Information Station on VHF. Outside the park, contact the U.S. Coast Guard on VHF or call the NOAA hotline 1-877-925-7773.
- Better reporting will help scientists understand and prevent collisions.

Glacier-Making Weather

Glacier Bay has a maritime climate, heavily influenced by ocean currents. The result is mild winter temperatures and cool summer temperatures near sea level. Summer visitors can expect highs between 50° and 60° degrees Fahrenheit (10-15 degrees Celsius). Winter temperatures rarely drop into the single digits, with average nighttime lows in the mid 20s and highs in the upper 30s.



Bartlett Cove receives about 70-75 inches of precipitation annually. You may find yourself thinking it's all coming down during your visit. April, May, and June are usually the driest months of the year, while September and October tend to be the wettest. All this moisture helps to create the lush temperate rainforests of the lower bay.

Keep in mind, these are weather conditions at sea level. Up in the mountains, conditions are more severe with colder temperatures and more precipitation that takes the form of snow. It's all that snow falling year after year that goes into creating the magnificent glaciers we love to see.

What to Wear?

The weather in Glacier Bay can change quickly over the course of the day, especially if you are traveling into the bay. Dressing appropriately will enhance your trip by allowing you to stay out in the elements and make the most of wildlife and glacier viewing. Remember, it's usually cooler on the water and near glaciers.



Hypothermia—Killer Cold

In the backcountry, good rain gear is a must. Staying dry will help you stay warm as wet clothing can wick away body heat and lead to hypothermia—the lowering of the body's core temperature. Hypothermia can kill. Prevention and early recognition are vital to safe camping. A victim of hypothermia may not realize his or her condition, and will often deny being cold or needing help.

Early Symptoms: Violent shivering, changes in mood or consciousness, irritability, cool, pale skin, slow or weak pulse, slow, shallow breathing.

Advanced Symptoms: Absence of shivering, unconsciousness.

Treatment: Prevent further heat loss. Provide shelter from cold, rain, wet ground, and wind. Replace wet clothing with dry synthetic clothing. Techniques to stay warm include:

- Wrap patient in space blanket, sleeping bag, or ground cloth.
- Wrap warm water bottles in cloth and place in the sleeping bag with patient.
- Provide close contact with another warm person.
- Build a fire.
- Feed patient sugars, carbohydrates, or sweet warm drinks.
- Keep patient awake.

DO NOT: Give alcohol. Rub or massage affected area. Expose to excessive heat.



Tides

The tidal fluctuations in Glacier Bay can be as high as 25 feet. This means that one moment you may be standing on the beach looking at mud flats stretching out for 100 yards and hours later the water is lapping at your toes. Or worse: one minute you've pulled your kayak up on shore so you can enjoy lunch, but you wake up 30 minutes later from your post-lunch nap to see your kayak floating away.

You hardly need to spend more than six hours in Bartlett Cove to realize that there is something interesting going on with the tides.

Tides result from the gravitational pull between the sun and the moon, and their relationship to the Earth. As these three celestial bodies are constantly in motion, the amount of gravitational pull varies and the tide levels change. Because it's

closer, the moon has the strongest influence on the tides. Its gravitational attraction causes the water surrounding the Earth to bulge. It bulges on the side closest to the moon due to gravitational pull. The bulge on the opposite side of the Earth is due to centrifugal force.

There are usually two high and two low tides daily on the West Coast. The times for highs and lows shift about 50 minutes later on consequent days. This means if high tide

is at 9:00 a.m. one day, it will be high at about 9:50 a.m. the next day, around 10:40 a.m. the next, and so on. Local conditions, such as topography, also influence the tides and the currents they generate. The entrance to Glacier Bay is narrow, yet a great deal of water must rush through that opening twice daily, creating currents in Sitakaday Narrows as strong as seven knots.

To see this incredible force in action, walk down to the water's edge about an hour after high or low tide. Fix your gaze on a shell or a piece of seaweed and watch how its proximity to the water's edge changes in just minutes. Be sure to keep that in mind when you decide to enjoy an after-lunch nap on your next paddling adventure.





The Fairweather Detective!

Discover more about Glacier Bay! Search for clues in *The Fairweather* newspaper to answer the questions below.

Show your detective work to a park ranger at the Visitor Center or Visitor Information Station. You will earn a prize for your investigative work!

1. What is the length of the Margerie Glacier?

 miles

2. What happened to Glacier Bay in 1925?

3. What are three things you can do to be bear savvy?

1. _____
2. _____
3. _____

4. Scientists conduct many research projects in Glacier Bay. What is one thing scientists have learned in Glacier Bay recently?

5. If you could spend a summer helping a scientist in Glacier Bay, what would you want to study?

6. How long have biologists been monitoring humpback whales in Glacier Bay?

7. How far away should boats, including kayaks, stay from humpback whales so as not to disturb them?

8. What is the Tlingit name for the new Tribal House being built in Glacier Bay?

9. Bears live throughout all of Glacier Bay National Park and Preserve. How many bears can you find in *The Fairweather*?

10. Use the map to find three Critical Wildlife Areas in Glacier Bay that are closed to people all year.

- a. _____
- b. _____
- c. _____

Bonus question

Look for this symbol during your visit:



What does it mean?

(Hint: Ask a ranger who is wearing it!)

Did you know?

Visitors often see porcupines on the trails around Bartlett Cove. Baby porcupines are born with soft quills that begin to harden several hours after birth. A baby porcupine is called a porcupette.





Ask a ranger about family-friendly guided ranger programs and activities in Bartlett Cove and check the schedule for our summer Discovery Days series for kids.

Kids Love Glacier Bay!

There are millions of acres of mountains, waterways, glaciers, wildlife, history, and adventure to discover. Would you like to experience and learn more about Glacier Bay National Park and Preserve? After all, there will be a time in the not-too-distant future when you will step in to take care of this park for future generations. Why not learn more now?

Are you ready to begin your Junior Ranger adventure? If you are between the ages of two and 200, you may want to become a Junior Ranger during your visit. There are many ways to pick up your Junior Ranger Activity Booklet.



If you came by plane or boat to Bartlett Cove, stop by the Visitor Center on the second floor of the Glacier Bay Lodge.

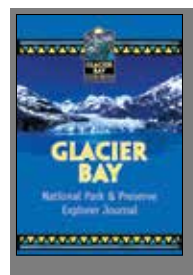


If you are on a tour boat, meet with the ranger on board.



If you are a virtual visitor, you can visit the park website at www.nps.gov/glba and print off your own booklet and get started.

Glacier Bay offers three different booklets, depending on your age.



For children between the ages of 2 - 6, we have the *PeeWee Ranger Activity Book*.

For children between the ages of 6 - 12, pick up the *Junior Ranger Activity Book*.

For people between the ages of 13 - adult, pick up the *Explorer Journal*.

When you have completed the activities, bring your booklet to a ranger and you will be awarded a special badge that makes you a Glacier Bay National Park and Preserve Junior Ranger.



For Teachers



Take Your Class on a Trip to Glacier Bay!

Last year, over 2,000 students and teachers visited Glacier Bay National Park in the heart of winter without ever leaving their schools. Kindergartners spotted bears and sea otters, fourth graders catalogued humpback whale behaviors, and high school students explored the wide range of careers with the National Park Service. These students all visited Glacier Bay virtually, using videoconferencing equipment to connect Glacier Bay rangers to classrooms across the country.

Glacier Bay offers a variety of interactive, curriculum-based, long-distance programs. Programs cover a variety of Glacier Bay topics and are grade appropriate. New this year is a program on glaciers for middle school students and a first person historic account of Glacier Bay's early visitors designed for senior centers and adult learners. All programs allow students to ask questions and interact with a park ranger. Sometimes students even earn a Junior Ranger badge!

Long distance programs are offered between November and February. A videoconferencing system (such as Polycom, LifeSize, or Tanberg) is required to conduct a visit. Programs are free and registration starts on October 1 each year. To register for a program, visit the Center for Interactive Learning and Collaboration (CILC) website at www.cilc.org. Search for programs offered by Glacier Bay and click request a program. Additionally, teachers may register for programs by phone. For a list of programs and ranger contact information, visit www.nps.gov/glbsa and look at the "For Teachers" section and then click "Distance Learning." We look forward to connecting to your classroom!



Learn More

Park Partners

As the official nonprofit education partner of Glacier Bay National Park and Preserve, Alaska Geographic connects people to Alaska's magnificent wildlands through experiential education, award-winning books and maps, and by directly supporting the state's parks, forests, and refuges. Over the past 50 years, Alaska Geographic has donated more than \$20 million to help fund educational and interpretive programs throughout Alaska's public lands.

Alaska Geographic operates bookstores across the state, including several locations in Glacier Bay: the park visitor center in Bartlett Cove, ranger district office in Yakutat, and on board the dozens of cruise ships that visit the area each year. Your purchases at these locations directly support Glacier Bay National Park and Preserve—a portion of every sale helps fund the park's educational and interpretive programs.

To find out more, become a member, or browse our selection of Alaska books, maps, and films, stop by any Alaska Geographic bookstore or visit our website at www.alaskageographic.org



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Geographic

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www.alaskageographic.org



Discover Alaska Collector Series
Pins, patches, hats, and other products featuring
this unique Glacier Bay design. Exclusively from
Alaska Geographic.

To Learn More

Visit the Alaska Geographic bookstore at the park visitor center in Bartlett Cove to find the best books, maps, films, and gifts related to the natural and cultural history of Glacier Bay National Park and Preserve.

Glacier Bay National Park and Preserve *Alaska National Park Series*

Author Kim Heacox takes you into a world of blue ice, temperate rainforests, misty mountains, and coastal wildlife. You will meet the bold explorers who trekked its glaciers and waterways, the scientists who study its vast landscape, and the Huna Tlingit who have lived here since time began.

Item #12806, 60 pages \$14.95



Beneath the Reflections DVD

Travel into the dark underwater world of Glacier Bay where perpetual snowfall and swirling currents shape the abounding patterns of life. Then, explore the natural and cultural history of the bay in the bonus feature, *Forever Wild*.

Item #30053001, 45 min. \$9.95



Glacier Bay Topographical Map Scale: 1:94,000

This sturdy waterproof and tear-resistant topo map is an excellent planning resource for hiking, camping, fishing, or hunting. The map denotes elevations, hiking trails, campgrounds, cabins, and provides a synopsis of public land protocols and restrictions.

Item #35073001 \$11.95



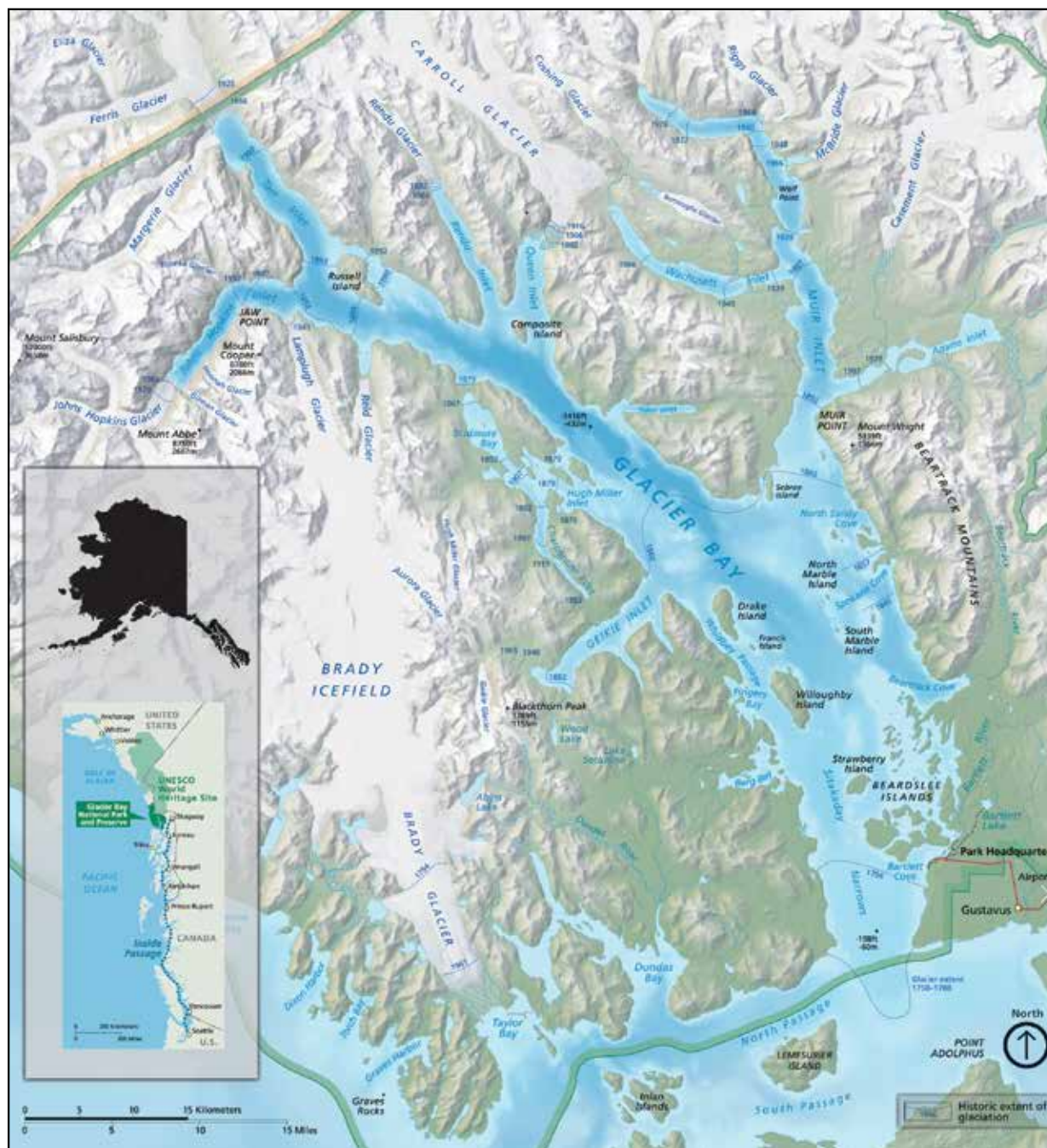
Glacier Bay Flash Drive *Over 300 photos*

Create your own wildlife, glacier, and wilderness scrapbook by downloading exquisite, high resolution photos taken throughout the park.

PC or Mac compatible \$30.00



Also available online at www.alaskageographic.org



For More Information

Glacier Bay National Park & Preserve
P.O. Box 140
Gustavus, AK 99826
907-697-2230
www.nps.gov/glba



Follow us on Facebook:
facebook.com/GlacierBayNationalPark

Emergency and Medical Assistance

Emergency Inside the Park

907-697-2651
KWM20 Bartlett Cove on marine band 16
There is no cell service in Glacier Bay

Emergency Outside the Park

Gustavus Emergency Response
Dial 911

Other Medical Assistance

Gustavus Community Clinic
42 Dolly Varden Lane, Gustavus
907-697-3008